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| 09/304,523 | 05/04/99 | YAMAZAKI | ^{mk} S 07977/046002 |

SCOTT C HARRIS
FISH & RICHARDSON
SUITE 1400
4225 EXECUTIVE SQUARE
LA JOLLA CA 92037

IM62/0830

EXAMINER

CHAMPAGNE, D

ART UNIT

PAPER NUMBER

1765

10

DATE MAILED: 08/30/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/304,523

Applicant(s)
Yamazaki et al.

Examiner
Donald L. Champagne

Group Art Unit
1765



☒ Responsive to communication(s) filed 26 July 2000

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three (3) month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of

Disposition of Claim

☒ Claim(s) 7-46 is/are pending in the application

Of the above, claim(s) _____ is/are withdrawn from consideration

☒ Claim(s) 25-30, 43, and 44 is/are allowed.

☒ Claim(s) 7-24, 31-42, 45, and 46 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirements

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☒ The drawing(s) filed on 4 May 1999 is/are ~~objected to by the Examiner~~ *2000/5/26/18*

☐ The proposed drawing correction, filed on _____ is ☒ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. §

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.

☒ received in Application No. (Series Code/Serial Number) 08/683,722

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 8

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Claim Rejections - 35 U.S.C. § 103

1. Claims 7-24, 31-42, 45 and 46 are rejected under 35 U.S.C. 103(a) as obvious over Imahashi *et al.* in view of Celler *et al.*

Imahashi *et al.* teaches (col. 5 lines 10-23 and 34) a method for manufacturing an LCD device, comprising the steps of: forming a semiconductor (*amorphous silicon*) film over a substrate having an insulating upper surface (*glass substrate*); and irradiating (crystallizing by heating) the semiconductor film with an excimer laser beam having a cross section which is elongated in one direction (*rectangular cross section*), while relatively moving the substrate with respect to the laser beam. Imahashi *et al.* also teach vacuum-sucking said substrate (holding the substrate with a *vacuum chuck*) during transport (col. 7 line 13).

Imahashi *et al.* does not teach vacuum-holding the lower surface of the substrate in contact with the flat surface of the stage during irradiation. Celler *et al.* teaches vacuum-holding the lower surface of the substrate in contact with the flat surface of the stage during irradiation (i.e., holding the substrate with a vacuum chuck during laser irradiation, col. 6 lines 39-40). Because it would have been convenient to do so, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to combine the teachings of Celler *et al.* with those of Imahashi *et al.* so as to hold the substrate during laser irradiation with a vacuum chuck.

Imahashi *et al.* does not teach that the vacuum chuck comprises a stage having a flat surface, and at least one suction inlet, and operates in such a manner that the lower surface of the substrate is in contact with the flat surface of the stage. However, since Imahashi *et al.* teach the method claimed, under the principle of inherency the invention is considered to be anticipated in this regard by Imahashi *et al.* As evidence tending to show inherency, it is noted that a vacuum chuck must embody these properties if it is to be used effectively.

Imahashi *et al.* does not teach flattening the substrate. However, since Imahashi *et al.* teaches the method claimed, under the principle of inherency the invention is considered to be anticipated in this regard by Imahashi *et al.* As evidence tending to show inherency, it is

noted that any substrate held successfully by a vacuum chuck must tend to be flattened by the pressure difference.

Imahashi et al. does not teach irradiating the crystallized semiconductor film (claims 19-24, 41 and 42). Celler et al. teaches irradiating the crystallized semiconductor film (col. 6 lines 28-29). Because Celler et al. teaches that this increases mobility (col. 1 lines 35-39 and 54-58), it would have been obvious to one of ordinary skill in the art, at the time of the invention, to combine the teachings of Celler et al. with those of Imahashi et al. so as irradiate the crystallized semiconductor film and produce a superior LCD device as an expected result.

Allowable Subject Matter

2. Claims 25-30, 43 and 44 are allowed.
3. The following is an examiner's statement of reasons for allowance: In the manufacture of an LCD device, the invention teaches deforming a semiconductor film on a substrate with an insulating surface from flat to curved by heating. The closest prior art, Adachi *et al.*, teaches restraint of the substrate to prevent deformation upon heating (col. 9 lines 10-11 and 19-22). No suggestion was found in the prior art for removing this restraint so as to produce the instant invention.
4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Examiner's Discussion

5. Applicants amended on 26 July 2000 (Paper No. 9) to overcome an anticipation rejection based on Imahashi *et al.* Applicants argued correctly (p. 8) that the reference does not teach vacuum suction of the substrate while it is being irradiated with a laser beam. However, a secondary reference, Celler et al., has been found which makes this limitation obvious.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
7. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Donald L. Champagne** whose telephone number is **(703)308-3331**.

DLC
23 August 2000


ROBERT KUNEMUND
PRIMARY PATENT EXAMINER
A.U. 41765